

# Tempe Aviation Commission

## IGA Monitoring Report

Month:

June 2003

Prepared by:

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9/9/03

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# 1. Introduction

This report is prepared by TAVCO to monitor the compliance of operations at Phoenix Sky Harbor International Airport with certain noise mitigation flight procedures over the City of Tempe. The Tempe Aviation Commission (TAVCO) consists of Tempe residents selected by the Tempe Mayor and City Council to assist and advise on aviation issues. The City of Tempe is located directly east of the Phoenix Sky Harbor International Airport in Phoenix, which has 3 parallel runways, Runway 8/26, Runway 7L/25R and Runway 7R/25L.

In 1994 the City of Phoenix and the City of Tempe agreed to continue noise mitigation flight procedures already in use over Tempe and to introduce a new procedure for aircraft arriving over Tempe to the new third runway (7R/25L) at Phoenix Sky Harbor International Airport from the east. Tempe had prior to the agreement challenged the plans for the construction of a third runway because of inadequate assessment of the environmental impacts.

## a) The 4-DME procedure

### The 1993 Environmental Impact Statement (EIS)

According to the EIS, which among other planned improvements included the construction of a third runway, departures to the east from the new runway would follow the so-called "One-DME" Standard Instrument Departure procedure (SID) similar to the SID already in use by aircraft departing to the east from the airport<sup>1</sup>.

### The 1994 Record of Decision

The continued use of the "One-DME" procedure was also stated in the Record of Decision (ROD) where the FAA approved the plans for a third runway. When Phoenix and Tempe signed the Intergovernmental Agreement (IGA) on noise mitigation flight procedures over Tempe, the FAA reaffirmed its commitment to uphold these procedures. The "One-DME procedure" became the "4-DME procedure" when a navigational aid (VORTAC) was moved.

### Standard Instrument Departure Procedure (SID)



North Runway 8L (Now 8): "Fly heading 085° to intercept PHX-075, across PXR R-350 at or below 3,000'. At 4 DME east of PHX VORTAC, turn right/left"  
Center Runway 8R (Now 7L): " Fly direct PHX VORTAC, cross PHR at or below 3,000'. Proceed via PHX R-075 to 4 DME east, turn right/left" (FAA SW-1 of August 10, 2000)

### Measure for Departure Procedure Compliance

Based on the 4-DME Standard Instrument Departure procedure (SID) TAVCO proposed a corridor along the Salt River to measure how commercial jet aircraft and large turboprop aircraft<sup>2</sup> complied with the "4-DME procedure" using the Noise and Flight Track Monitoring System that the airport had agreed to install. This proposal was adopted by the Tempe City Council, but was rejected by the City of Phoenix. The airport use a vertical line to measure compliance of jet departures called the "4-DME Gate" or the "Exit Window Only Gate", which is a 5,500 feet long imaginary line running

<sup>1</sup> Source: Final Environmental Impact Statement Phoenix sky Harbor International Airport Master Plan Update Improvements, November 1993, Section 5.

<sup>2</sup> Aircraft certified and operated according to Title 14 FAR Part 121 or 135 with gross weight exceeding 12,500 pounds.

north south at 4-DME or approximately at Price Road. Turns by carrier jets north or south away from the Salt riverbed before reaching this line, or failures to stay inside the north or south end of this line are registered and in a compiled format submitted to the airlines in a "Notice of Deviation" letter by the airport. Deviations influenced by local weather conditions are excluded from the notification procedure.

This report compares departure compliance using the Tempe Corridor and the Phoenix "4-DME Gate" or "Exit Window Only Gate", and includes large turboprop aircraft because they are part of the 1994 agreement. Since the implementation of the "4-DME Gate" deviation standard for large carriers in 1997, the main issue of concern has been how well these aircraft on departure from Phoenix Sky Harbor International Airport to the east keep to the Salt riverbed and avoid flying over populated areas in Tempe.

### **b) The "Side Step" procedure**

This is a noise mitigating procedure for jets and large turboprop aircraft that approach Phoenix Sky Harbor International Airport from the east to land on the new south runway, Runway 25L. Aircraft are directed to approach the center runway, Runway 25R, until they are 3 NM from the runway end or abeam Sun Devil Stadium at Mill Avenue in Tempe. At this point the pilot can be requested by the Phoenix Air Traffic Control to change the approach course to land on Runway 25L. When the pilot directs the aircraft from a stabilized approach to the Runway 25R towards the left and line up for landing on Runway 25L, the pilot performs a "side step procedure". This procedure is designed to keep large aircraft approaches over the river bed as long as possible before they close in towards neighborhoods in downtown Tempe south of the riverbed.



No measure has been set up in the airport Noise and Flight Track Monitoring System to monitor the use of this procedure, and in its present format this report does not include any data on the utilization of the "side step" procedure.

On March 27, 2002 the FAA suspended implementation of a charted "side step" procedure because of flight safety concerns. Presently the FAA is clearing jets and large turboprop aircraft for straight-in approaches to Runway 25L from the east.

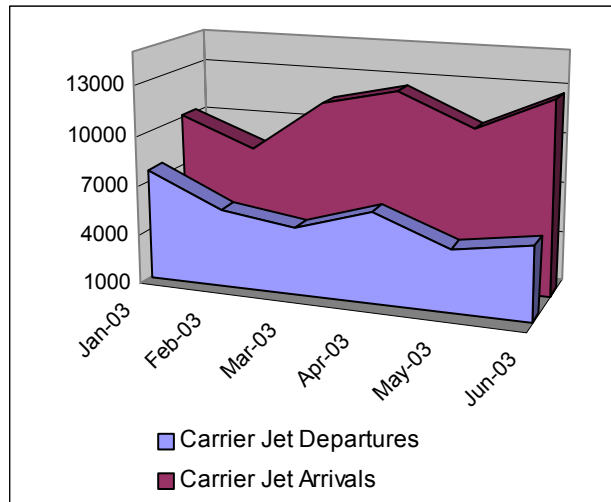
### **c) Departure Split (Equalization)**

This procedure attempts to disperse evenly on an annual basis the noise impact of departing eastbound and westbound aircraft between Tempe and Phoenix during day and nighttime hours.

## 2. Aircraft Operations

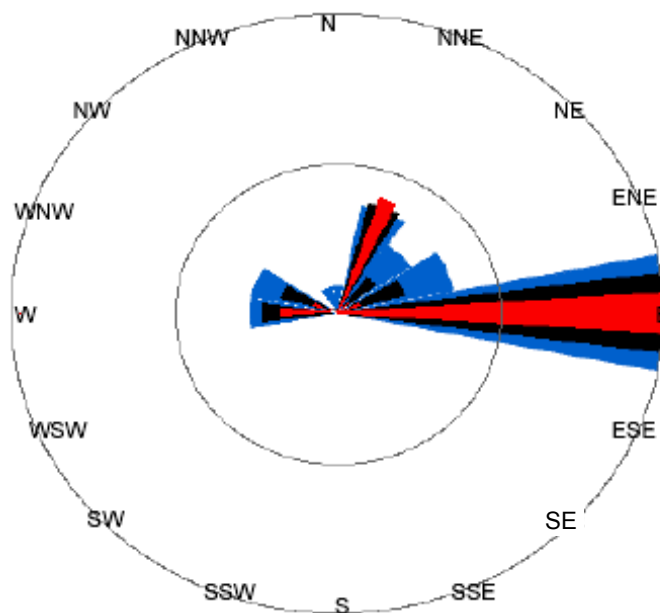
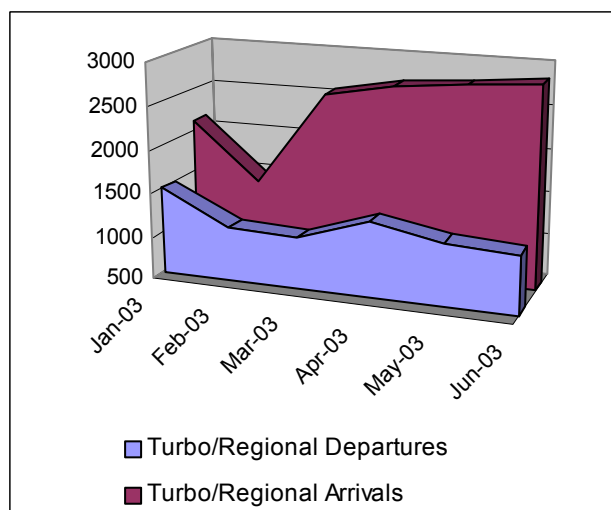
### Carrier Aircraft

The number of large carrier jets departing to the east during the month of June 2003 increased 15.6% compared to May 2003. Arrival operations from the east towards the west were up 20.1%.






### Regional Jets & Large Turboprop Aircraft

Regional jets and large turboprop departures towards the east decreased 3.8% compared to operations in May 2003. The number of regional jets and large turboprop aircraft arriving from the east increased 2.2%.



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-  For each of the sectors the outermost (blue) wedges show the wind frequency distribution.
-  The middle (black) wedges show the distribution of the product of the two columns, i.e. the wind speeds times their frequency.
-  The innermost (red) wedges show the distribution of the wind speeds cubed (i.e. the energies) multiplied by their frequencies.

### Weather

Modest winds up to 12.9 mph. Temperatures were up to 109.5° F.

This figure shows distribution of winds averaged out per day of the month of June 2003. The circles indicate the length of time for each prevailing wind direction.

### 3. Departure Compliance

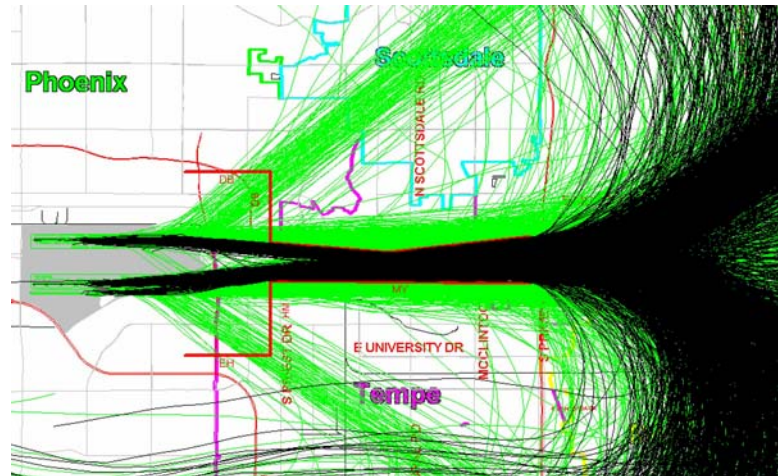
#### Compliance

Including the large turboprop aircraft, which routinely are routed on approximate departure angles of 120° towards the southeast and 60° towards the northeast, **53.9%** of all jet and larger turboprop aircraft departures to the east complied with the Tempe Corridor during the month of June 2003. 97.3% of the jets complied with the Phoenix 4 DME gate. Departures by large turboprop aircraft are not included in the Phoenix gate compliance rate.

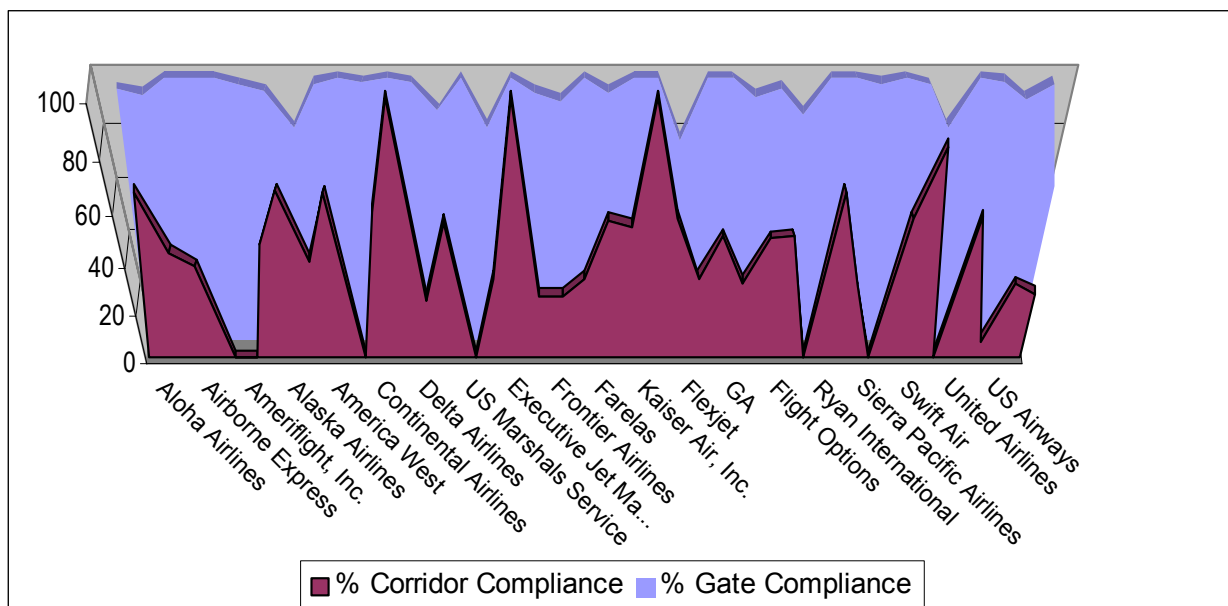
#### Weather

Departures excluded<sup>3</sup>:

6/10 10:56 a.m. to 11:09 a.m.  
6/14 10:59 a.m. to 11:27 a.m.  
6/20 06:15 a.m. to 06:50 a.m.  
6/21 09:02 a.m. to 09:30 a.m.



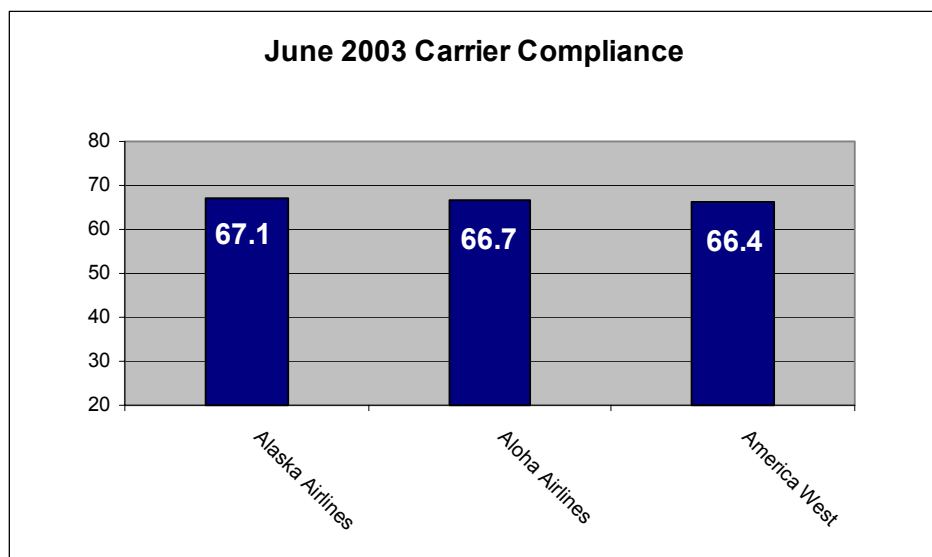
Flight tracks outside the Tempe Corridor are depicted in green.



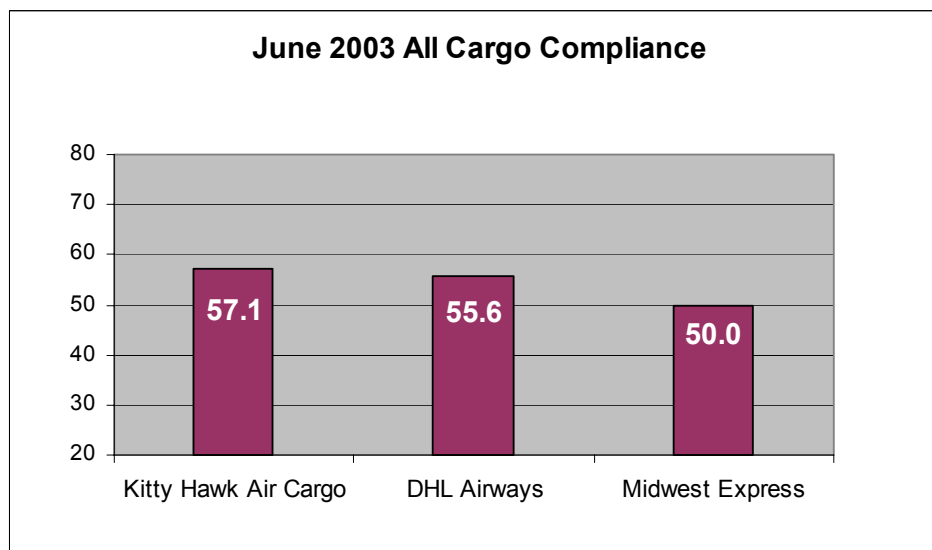
<sup>3</sup> Based on Phoenix evaluations of weather influencing navigation east to 4DME

### Top Airlines

Only 3 carriers with over 10 departures to the east during the month of June 2003 had more than 60% of their aircraft stay within the Tempe Corridor. This is a decline from last month, when the 3 best airlines had over 70% of their aircraft comply with the Tempe Corridor.



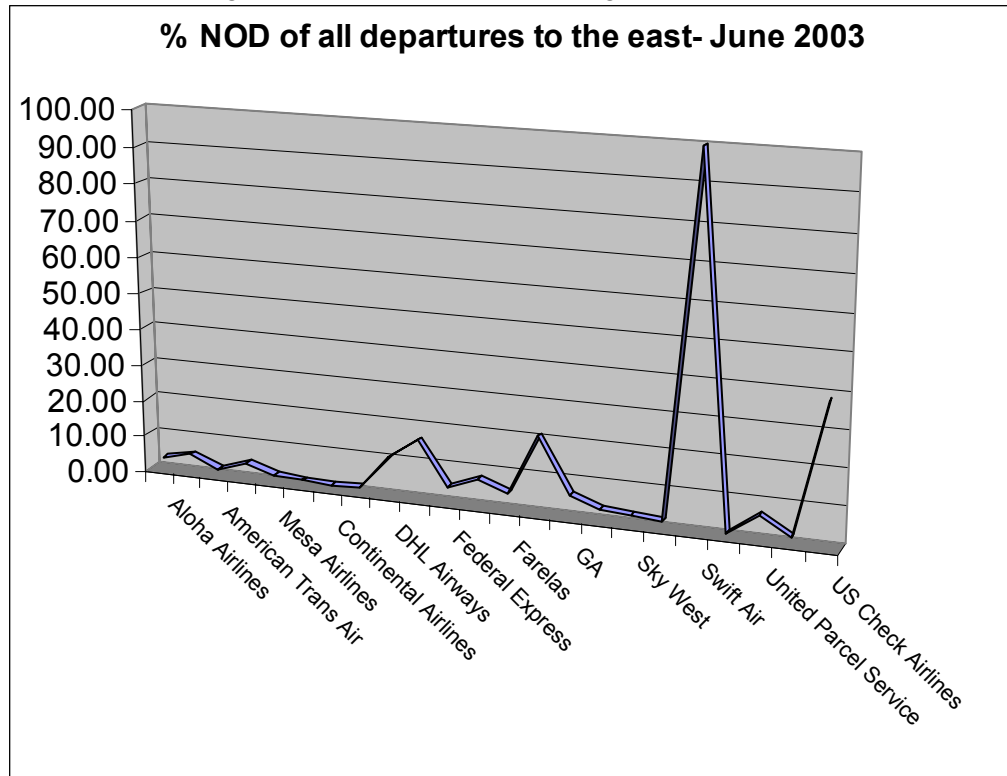
America West is back to April levels where the airline reached 66.2%.



The compliance rates for the top 3 all cargo airlines improved from the rates reached in May 2003, when the top 3 had compliance rates between 42.9% to 52.2%.

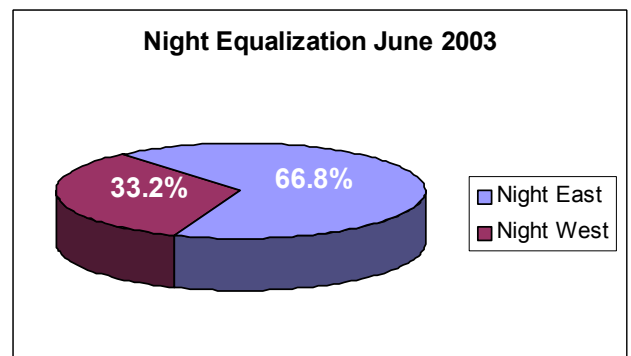
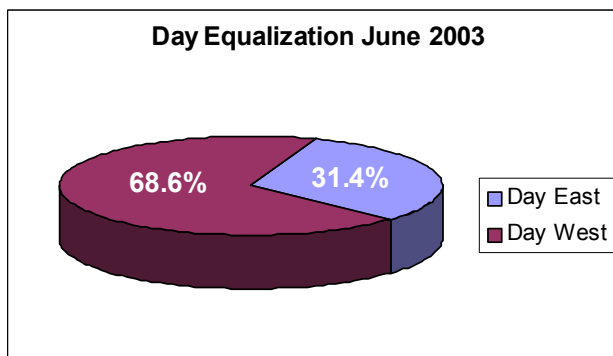
### Notice of Deviation

The City of Phoenix issues Notice of Deviation (NOD) to airlines, which aircraft fail to comply with the 4DME Gate. Among the airlines with at least 5 departures to the east during the month of June, 2003, US Check Airlines and Kitty Hawk Air Cargo received the most notices relative to the number of east departures registered for each airline during the month.



### **4. East/West Departure Split**

The split in carrier jet and large commuter aircraft departures to the east and west of the Phoenix Sky Harbor International Airport is generally not as favorable for Tempe during the nighttime hours compared to daytime hours. In June 2003 66.8% went east during nighttime and 31.4% went east during daytime.



Day and nighttime departures are generated by a query covering day + evening hours and nighttime hours. Day = 7: 00 a.m. to 9:59:59 p.m. local time and Night = 9:59:59 p.m. to 7:00 a.m.

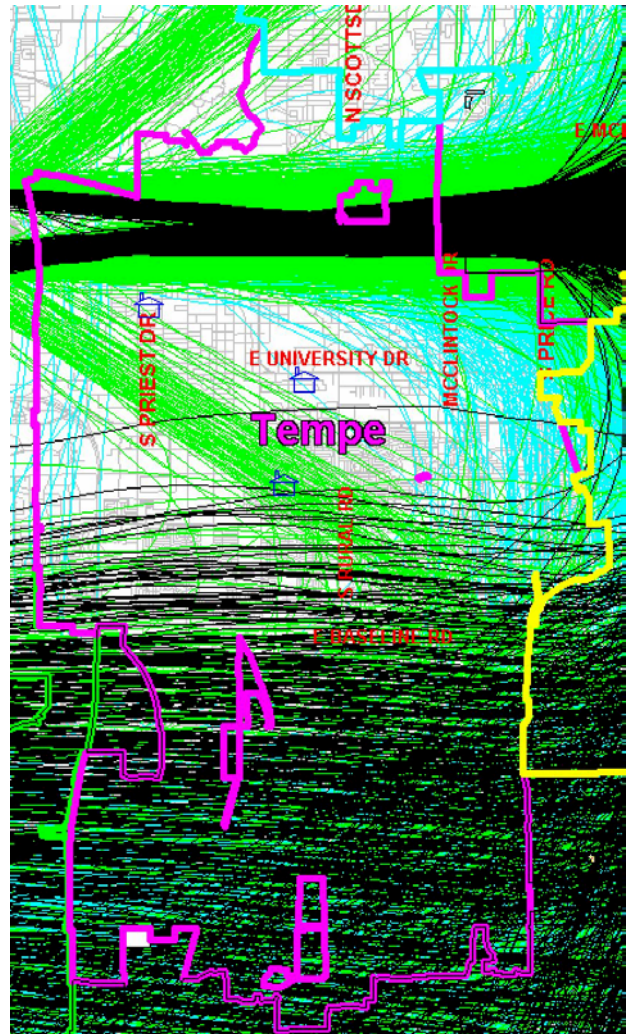
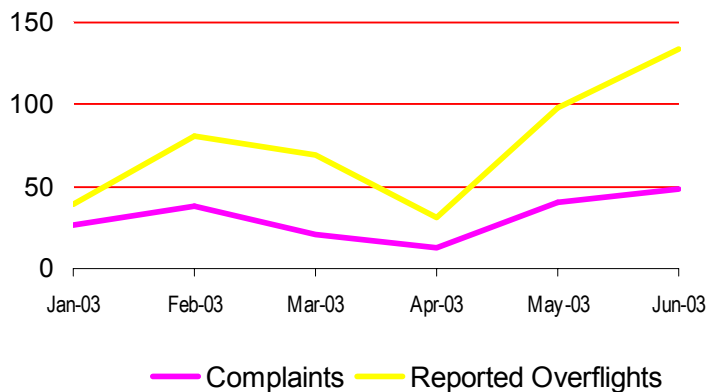


## 5. Complaints

The City of Tempe started registering aircraft noise complaints from Tempe residents in October 2000 after the opening of the third runway at Phoenix Sky Harbor International Airport.

In June 2003, 3 residents filed 48 aircraft noise complaints with the City of Tempe. 134 flights were identified as disturbing by being very noisy, too frequent or off course. Two complaints addressed noise from helicopters. 97.1% of the complaints were filed by the same resident.


**Monthly Complaints**



Green flight tracks = Departures outside the Tempe Corridor

Black flight tracks = Departures inside the Tempe Corridor

Blue flight tracks = Arrivals

Addresses of residents that complained = 

Month	Sum Of Complaints	Increase	Incursions	Sum Of Incursions	Residents
Jan-03	1165	27	3785	39	11
Feb-03	1203	38	3866	81	13
Mar-03	1224	21	3935	69	19
Apr-03	1237	13	3966	31	6
May-03	1277	40	4064	98	5
Jun-03	1325	48	4198	134	3